

WHAT IS CLAIMED IS:

1. A method for manufacturing a semiconductor optical device comprising:

5 step for forming an epitaxial growth layer containing at least an active layer which can emit light, using a III-V group semiconductor material;

step for forming an insulation layer over the epitaxial growth layer, which can prevent the V group element from escaping during heat treatment;

10 step for applying heat treatment to the epitaxial growth layer at a temperature of 800 degree-C or more;

step for removing the insulation layer.

2. The method for manufacturing a semiconductor optical device according to Claim 1 comprising:

15 step for performing PL measurement after the heat treatment step.

3. A semiconductor optical device comprising:

20 an epitaxial growth layer formed of a III-V group semiconductor material, containing at least an active layer which can emit light;

wherein the composition of the epitaxial growth layer is changing continuously near the interface.

4. The semiconductor optical device according to Claim 3, wherein a photoluminescence wavelength is blue-shifted, as
25 compared to a semiconductor optical device which has an

active layer with the same composition as said active layer and an epitaxial growth layer whose composition is changed stepwise near the interface.

5 5. The semiconductor optical device according to Claim
4, wherein the photoluminescence wavelength is blue-shifted
by 20 meV or more.

6. The semiconductor optical device according to Claim
3, wherein distortion between the epitaxial growth layers is
more eased, as compared to a semiconductor optical device
10 which has an active layer with the same composition as said
active layer and an epitaxial growth layer whose composition
is changed stepwise near the interface.